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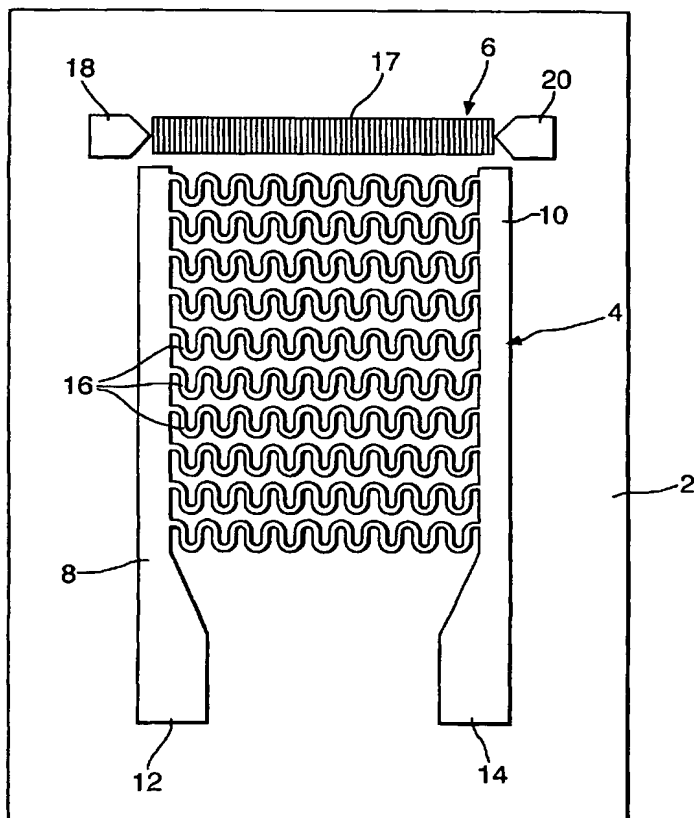
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[Continued on next page]

(54) Title: **CORROSION SENSING MICROSENSORS**



(57) Abstract: A microsensor for detecting corrosive media acting on a bulk metallic material when mounted in situ adjacent a location in the bulk metallic material. The microsensor includes a plurality of corrosive tracks (16; 132; 21613) exposed to the corrosive media, each said corrosive track being formed as a patterned conductive thin film track. The tracks follow serpentine paths which include a plurality of bends, at least two of which are of opposite curvature, to provide a high degree of miniaturisation coupled with accurate and reliable corrosion sensing characteristics. The corrosive tracks may be formed from an alloy material, such as an aluminium alloy, to mimic the corrosive characteristics of a bulk metallic alloy and to provide improved corrosion detection for components made from such materials at high degrees of miniaturisation.



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INTERNATIONAL SEARCH REPORT

International Application No.
PC 17 GB 03/04222

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01N17/04 G01N17/00 G01N17/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, INSPEC, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 446 369 A (BYRNE MARK T ET AL) 29 August 1995 (1995-08-29)	17-23
Y	abstract; figure 1 column 3, line 34 - column 6, line 5 column 12, line 58 - column 14, line 22 column 17, line 11 - line 42 -----	1-10,12, 15,16
X	US 4 780 664 A (HOWE ROBERT E ET AL) 25 October 1988 (1988-10-25)	17
Y	column 1, line 62 - column 6, line 41; figures 1,2 ----- -/--	1-10,12, 15,16

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

 Inte Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CLIFFORD G. MOORE, BORIS MIKSIC: "INSTRUMENTATION FOR MEASUREMENT OF THE EFFECTIVENESS OF VAPOR CORROSION INHIBITORS" NACE, NATIONAL ASSOCIATION OF CORROSION ENGINEERS, CORROSION '95, [Online] no. 490, March 1995 (1995-03), pages 1-8, XP002271301 Orlando Retrieved from the Internet: URL: http://www.cortecvci.com/Publications/ Papers/VCIPProducts/CTP-15.PDF > [retrieved on 2004-02-25] page 2, last paragraph to page 3, penultimate paragraph	1-3, 6-10,15, 17
X	----- PATENT ABSTRACTS OF JAPAN vol. 009, no. 009 (P-327), 16 January 1985 (1985-01-16) - & JP 59 159061 A (MATSUSHITA DENKO KK), 8 September 1984 (1984-09-08) abstract; figure 1	1-6,8
X	----- EP 0 932 037 A (CTS CORP) 28 July 1999 (1999-07-28)	17
Y	paragraph [0025] - paragraph [0027]; figures 2,3	1-8,15
Y	----- US 6 383 451 B1 (KHO YOUNG-TAI ET AL) 7 May 2002 (2002-05-07) cited in the application column 3, line 63 - column 4, line 24; figures 1,6	1-8,15
X	----- PATENT ABSTRACTS OF JAPAN vol. 013, no. 495 (P-956), 9 November 1989 (1989-11-09) - & JP 01 197629 A (HITACHI LTD), 9 August 1989 (1989-08-09) abstract; figures 1-7	1-6,8, 12,13
X	----- US 3 148 348 A (ROHRBACK GILSON H) 8 September 1964 (1964-09-08) column 4, line 45 - line 75; figures 4,5 column 1, line 13; claim 1	1,4,8, 15,17
X	----- EP 0 528 554 A (BRITISH AEROSPACE) 24 February 1993 (1993-02-24) column 4, line 20 - column 5, line 57	17-23
P,X	----- US 2003/029232 A1 (DINWIDDIE RALPH B ET AL) 13 February 2003 (2003-02-13) paragraph [0020] - paragraph [0030]; figure 7	1-6, 8-10,15, 17
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INTERNATIONAL SEARCH REPORT

International Application No
PC 03/04222

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 380 763 A (PEART LELAND L ET AL) 19 April 1983 (1983-04-19) column 2, line 16 - line 44; figures 1,3A,3B,4 column 5, line 10 - line 52 -----	17-23
Y	US 5 338 432 A (AGARWALA VINOD S ET AL) 16 August 1994 (1994-08-16) cited in the application	17-23
A	the whole document -----	1,12,13
A	DATABASE CORROSION [Online] STN, Cambridge Scientific abstracts; Y.-G. KIM, D.-S. WON, H.-S. SONG, S.-M. LEE, Y.-T. KHO: "Utilization of thin film electric resistance probe for underground pipeline corrosion rate measurement" XP002271302 Database accession no. 20010870 abstract & 14TH INTERNATIONAL CORROSION CONGRESS (ICC) PROCEEDINGS, 26 September 1999 (1999-09-26), - 1 October 1999 (1999-10-01) Cape Town, South Africa ISBN: 0-620-23943-3 -----	1-8,15
A	DATABASE WPI Section PQ, Week 198530 Derwent Publications Ltd., London, GB; Class Q18, AN 1985-182349 XP002271303 -& SU 1 085 871 A (KAMA COACH MFG WKS) 15 April 1984 (1984-04-15) abstract; figures 1,2 -----	1,17

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 03/04222

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-23

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/ GB 03/04222

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-16 and not novel claims 17-23

The sensor includes a plurality of meandering tracks
Problem solved: further miniaturisation (application
p.3,1.3-6)

2. claims: 24,25

the track is annealed after deposition
problem: to improve the degree to which the corrosive
characteristics of the thin film tracks mimic the bulk alloy
(application, p.11,1.2-6)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

..., GB 03/04222

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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